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Convulsive activity evoked by cerebral stimulation in awake monkey. L. MIHAILOVIĆ AND J. M. R. DELGADO.
Depts. of Physiology and Psychiatry, Yale Univ.
School of Medicine, New Haven, Conn.

Surface and depth leads, up to 40, were implanted in the brains of 22 monkeys (*Macaca mulatta* for 2-7 mo. In the awake animal thresholds for evoking electrical and motor convulsive manifestations were determined, and electrical activity was recorded through 14 channels. Correlations between electrical and motor manifestations were studied in the following structures: frontal, premotor, motor, temporal and occipital cortex; cingulate gyrus; septal area; amygdaloid nucleus; hippocampus; fornix; basal ganglia; thalamic nuclei; subthalamus; hypothalamus; brain stem reticular formation. The motor cortex had the lowest convulsive threshold, convulsive movements were usually localized and electrical after discharges spread over a wide area. The motor cortex had somewhat higher thresholds with more motor spreading. The frontal cortex had still higher convulsive thresholds and the occipital cortex had the highest. Their electrical after discharges usually remained localized. The duration of after discharges was longest from motor and premotor cortex, shorter from frontal, and shortest from occipital cortex. Of the deep structures, the hippocampus had the lowest convulsive threshold. Stimulation of the cingulate gyrus with intensities insufficient to produce an after discharge from this area fired the contralateral hippocampus to discharge for a considerable period. Discharges in both temporal tips were produced by septal stimulation. Electrical after discharges produced from various thalamic nuclei had higher thresholds than hippocampal and septal discharges. Even with the highest intensities employed convulsive movements were not evoked by stimulation of the caudate nuclei. Significant lowering of convulsive threshold and increased tendency toward spreading could be observed when an area was repeatedly stimulated for long periods with intensities producing convulsive after-discharges. (Aided by grants from The Foundations' Fund for Research in Psychiatry and ONR, Nr 113-320.)

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